● PRINTER RUSH ●
(PTO ASSISTANCE)

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[RUSH] **MESSAGE:** SPECIFICATION Page 31 of 39, Parag. [0043], Lines 13-14 has Attorney Docket Number only, Please supply Serial Number.

* Pg. 1 also list doc. number in [0001] ~~Date~~ 8-26-05

Thank You,
XIRB

[XRUSH] **RESPONSE:** completed 8-26-05

INITIALS: RB

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Electronic Version

Stylesheet Version v1.1.1

Description

MULTIPLE ALLOY ROTOR AND METHOD THEREFOR

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This is a continuation-in-part patent application of ~~co-pending~~ United States patent application Serial No. ~~{Attorney Docket No. 132847}~~, 10/463441 filed June 18, 2003, now patent # 6807860

BACKGROUND OF INVENTION

FIELD OF THE INVENTION

[0002] *[0002]* The present invention generally relates to turbine rotors, such as those used in steam turbines, gas turbine engines, and jet engines. More particularly, this invention relates to a rotor and method of producing a monolithic rotor containing two or more alloys within separate regions of the rotor resulting in a transition zone between different alloy regions, and to a method of determining the shape of the transition zone to enable the final machined geometry of the rotor to reduce any thermal insta-

shape of the transition zone obtained from the analysis of the sectioned forging specimen. Figure 7 shows the results of such analysis using a temperature of about 1150°F (about 620°C), and evidences that the predicted deflection profile is very close to the actual deflection profile of a rotor machined from a rotor forging produced by the same process as the forging specimen.

[0043] *[0042]* Figure 3 represents an alternative to the chemical analysis approach described above, in which the boundary points of the transition zone 20 are ascertained by ultrasonically examining the rough-machined forging 10. Such an approach is disclosed in copending and commonly-assigned U.S. Patent Application Serial No. 10/463441 ~~{Attorney Docket No. 132847}~~, incorporated herein by reference. In an investigation in which this approach was implemented in the present invention, an ultrasonic transducer 78 was placed against the outer surface of the forging 10, and ultrasonic energy was transmitted through the forging 10 along the transition zone 20 to detect changes in the response of the forging material to ultrasonic energy. As evidenced by Figure 8, ultrasonic inspection of the forging 10 produced a noise pattern corresponding to variations in the metallurgical characteristics within the forging 10,